



# ASM International Equity Research Report

CUIRS Global Equity Team

Reyna Kao | Jacky Leung | Sunny Wu | Cheryl Chau |  
Sunny Wong | Angus Cheung

## ASM International | Europe

# Leading player to realize Moore's Law, Initiate OW

Stock Rating

Over-Weight

Target Price

€ 305.10

### Key Positive

#### Resilient top-line growth from ALD market

ASM International, with a market capitalization of € 12.5 bn, is a key player in the Atomic Layer Deposition (hereby "ALD") market. ALD is a type of deposition technique that provides increased control and accuracy in the deposition process when compared with the more traditional chemical vapor deposition processes. The recent trend of continuous shrink of transistor nodes and transformation of more 3-dimensional transistor structures has significantly raised the demand for ALD from foundry companies, as it allows control of the thickness of a conformal and uniform film layer at an atomic level. From 5nm to 2nm chip production, the ALD demand on a single wafer production doubles. As the top semiconductor manufacturers ramp up the Capex spending for advanced chips, we assumed that the doubling demand is reasonable. Based on this key assumption, the projected total addressable market size under our view in 25E is US\$ 4 bn, higher than ASMI's estimation of US\$ 3.7 bn, with a 4-year CAGR growth of 20.4%. Owing to ASMI's leading position and solid customer relationships, we modeled ASMI's market share to be sustainable over the next 3 years and benefit from the top-line expansions ([link](#)).

#### Backed by the high demands of DRAM and NAND

Serving as an essential technology for wafer fabrication, the ALD market keeps expanding under the recent growth of the semiconductor industry due to rising urbanization and rising products by industry leaders. Moreover, the growing popularity of DRAM and NAND has raised the demand for ALD. The multiple patterning technique and deposition of high dielectric in the capacitor cell for DRAM and spacer-aligned multiple patterning requirements for shrinking planar NAND devices have both increased the stringent demand for single-wafer ALD tools from ASMI.

#### Uptick in revenue after expansion of existing factories

One of ASMI's main customers, the world leading foundry - TSMC will expand its production capacity for mature and specialized nodes by about 50% by 2025. The plan includes building numerous new fabs in Taiwan, Japan, and China, further intensifying competition between TSMC and such contact makers of chips as GlobalFoundries, UMC, and SMIC. Also, its N2 risk production in 2024 and volume production in 2025 would continuously fuel the demand for ALD technology supplied by ASMI, providing a more careful and slower deposition process to provide good conformal coating around all the surfaces. Apart from TSMC, Samsung aims to produce 2GAP in 2025 volume production, while Intel targets 20A volume production in 2024 and volume production in 2025. All these executions of the "below 3nm" technology roadmap from the leading chip makers would benefit the growth of ASMI.

### Global Equity Team

Reyna Kao

[reynakaocuhkirs2022@gmail.com](mailto:reynakaocuhkirs2022@gmail.com)

Jacky Leung

[jackyleungcuhkirs2022@gmail.com](mailto:jackyleungcuhkirs2022@gmail.com)

Sunny Wu

[sunnywucuhkirs2022@gmail.com](mailto:sunnywucuhkirs2022@gmail.com)

Cheryl Chau

[cherylchaucuhkirs2022@gmail.com](mailto:cherylchaucuhkirs2022@gmail.com)

Sunny Wong

[sunnywongcuhkirs2022@gmail.com](mailto:sunnywongcuhkirs2022@gmail.com)

Angus Cheung

[anguschuengcuhkirs2022@gmail.com](mailto:anguschuengcuhkirs2022@gmail.com)

### ASM International. (ASM NA)

<b>Stock Rating</b>	<b>Over-weight</b>
<b>Target Price (€)</b>	<b>€305.10</b>
Shr price (25/11/22)	€254.20
Up/downside (%)	20%
52-Week Range (€)	€193.72-410.30
Shares Out. (mn)	48.7
Mkt Cap (€ bn)	€12.53 bn
EV (€ bn)	€11.87 bn
50 Days Mov AVG (€)	€245.88
200 Days Mov AVG (€)	€271.75

### Fiscal year (12/31 End)

(€ mn)	2021A	2022E	2023E
<b>Revenue</b>	<b>1,730</b>	<b>2,148</b>	<b>2,595</b>
YoY (%)	30%	24%	21%
<b>Gross Profit</b>	<b>828</b>	<b>1,035</b>	<b>1,276</b>
GPM	48%	48%	49%
<b>EBIT</b>	<b>492</b>	<b>612</b>	<b>760</b>
OPM (%)	28%	29%	29%
Pretax Income	597	635	756
<b>Net Income</b>	<b>495</b>	<b>527</b>	<b>627</b>
NPM	29%	25%	24%
<b>Basic EPS</b>	<b>10.2</b>	<b>10.8</b>	<b>12.9</b>

## ASM International | Europe

### Key Positive (cont.)

#### Market share gain in the fast-growing epitaxy industry

ASMI's epitaxy tools offer customers precise temperature control during the manufacturing process. Recently, its customers plan to dual source its epitaxy tools in response to the resilient end-market demand including power devices and electric vehicles. ASMI currently has a market share of approximately 15% and it is aiming to double its market presence up to 30% by 2025, mainly relying on three drivers: 1) Logic / Foundry; 2) Memory for high-performance DRAM; and 3) Power, Analog, Wafer.

For logic devices, epitaxy is adopted to solve scaling issues and improve electrical conductivity by changing lattice structures. Given the market trend of shrinking logic device size, the demand for epitaxy would ramp up as it helps to maintain high performance within a compressed structure. For power semiconductors, ASMI broke into more advanced nodes in 2017, and it could be a huge upside when more players have the capability and resources to start scaling up the manufacturing of leading nodes.

#### Acquisition of LPE creates a positive synergy effect and cost of ownership

In July 2022, ASMI announced it acquired the epitaxial reactors manufacturer LPE ([link](#)). ASMI has finished this acquisition with both cash and shares and LPE would operate as a product unit under ASM's Global Products organization. Also, ASMI promises to pay the earnout with up to the same amount as expected revenue contributed by LPE (€100 million) entirely from its net cash balance if LPE has hit certain performance metrics over two years after the closing of the transaction. Through this acquisition, ASMI could capture the growth opportunity of the SiC epitaxy market by leveraging the capabilities and resources of LPE by realizing the cost of ownership and business synergies.

LPE is an Italian manufacturer of epitaxial reactors for silicon carbide (SiC) and silicon, and the firm focuses on designing, manufacturing, and selling advanced epitaxy tools for power applications.

There is an attractive upside coming from LPE – LPE's expertise lies in the field of manufacturing SiC epitaxy tools, particularly addressing the EV market. The SiC epitaxy market presents an attractive investment opportunity for ASMI as SiC batteries could address the two largest challenges of EV industry – Range and Charging Time, battery range is enhanced while charging time is shortened due to their superior properties. From Mordor Intelligence, the epitaxy equipment market is expected to grow at CAGR of 20% during 2021 to 2026 ([Mordor Intelligence, 2021](#)). Considered LPE's existing recognized SiC customers base, we modeled it will contribute €100 mn revenue to ASMI in 23E.

#### Initiate OW, with 12-month TP at € 305.10 (20% upside)

We first adopted a DCF model at TP € 335.40, and a P/E valuation at TP € 293.4 to capture its long-term growth potential.

We further determine our **TP of € 305.10 (Implied 22E P/E of 23.8x) with a potential 20% upside as of closing price on 2022 November 25<sup>th</sup>**.

We justified this valuation is reasonable if we look at ASMI's historical trading multiples – Our implied 22E P/E of 23.8x lies within 1 to 1.2 standard deviation above the 10-year trading median.

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## Financials

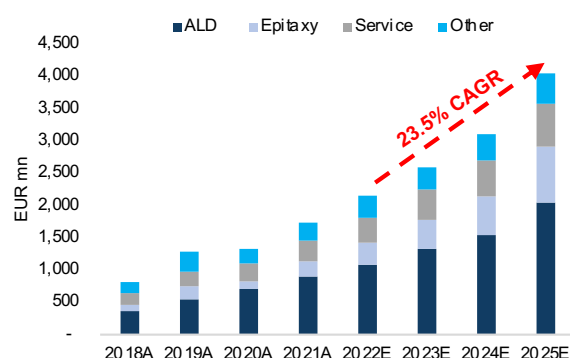
### Income Statement

We model ASMI's net income growth at a **+24.9% CAGR** in 2022E-25E, with revenue growth at **+23.5% CAGR**, reaching 25E € 4.0 bn revenue scale (Exhibit 1) and € 954 mn net profit (Exhibit 2).

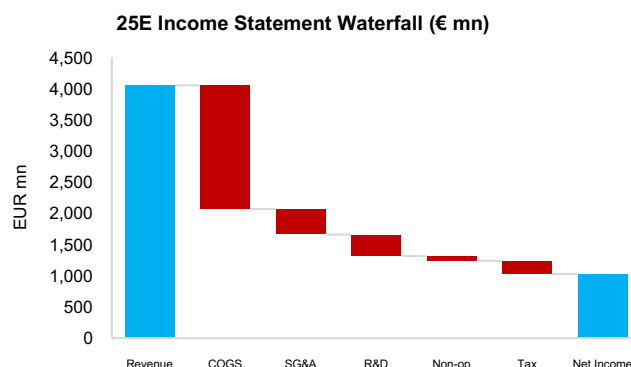
#### Revenue growth will be mainly driven by ALD

ASMI's revenue from ALD accounted for 52.2% of its total revenue in 21A, which means the ALD market is the main determiner of ASMI's revenue expansions. The ALD segment is expected to outperform the Wafer Fab Equipment (hereby "WFE") market. The annual growth of the WFE market is projected to go into negative territory (-5.9%) in 23E, the ALD market will be healthily growing at 20.4% in 22E-25E. Logic/foundry is the main ALD demand driver, which we believe will provide a sustainable revenue stream with around 60% of the total ALD revenue contribution. As the top chip makers invest Capex in 3nm or 2nm chip manufacture, it will transfer into a volume increase by 10% YoY. Meanwhile, given the technology upgrade trend, the demand for more high-end tools will increase, driving up the ASP of ALD tools. We believe that ASMI could maintain the market-leading position and benefit from top-line market growth. Combining the above, we expect ASMI's ALD revenue to grow at a +21.0% CAGR in 22E-25E, in line with the industry growth. In addition, ASMI is expected to capture the ramping sales in the Epitaxy market. While the market is growing at a CAGR of 20.4% from 22E-25E, the company's market share expansion strategy will result in an uptick in epitaxy sales, at a 23.5% CAGR growth rate in 22E-25E.

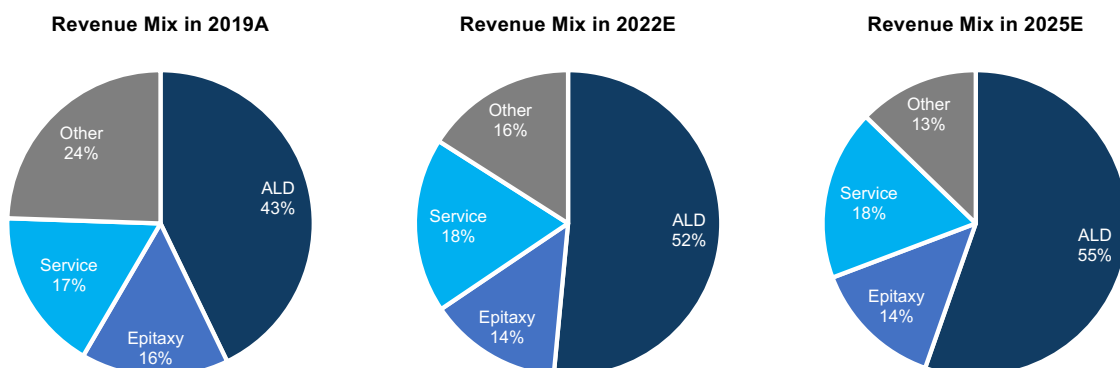
**Exhibit 1: 22E-25E Revenue growth will be fueled by ALD and Epitaxy segment**



**Exhibit 2: We expect 25E revenue approach € 3.8 bn with Net Income at € 1.0 bn**



**Exhibit 3: ALD Revenue would account for 55% of total revenue in 2025E**  
ASMI revenue mix in 2019A, 2022E, 2025E



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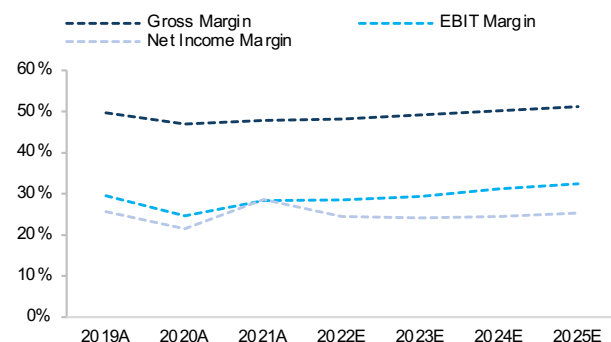
# Financials

### Income Statement (cont.)

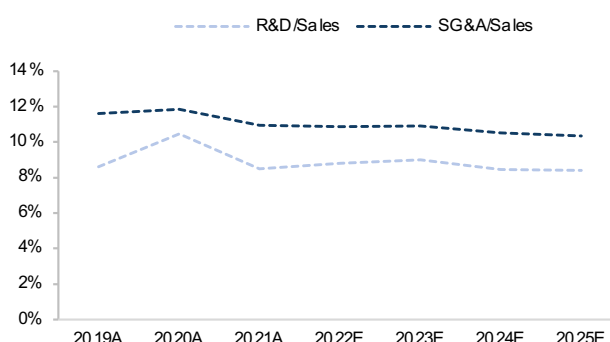
As for the gross margin, it has been stable at 47 to 50% for the past 3 years due to a mature business model. We expect the gross margin to improved by 1% each year in the forecasted period, in line with the company's forward guidance of 46 to 50%.

Besides, we expect R&D/Sales to increase from 8.5% in 21A to 9.2% in 22E and reach 9.4% in 25E as we believe it will increase its input to capture the market growth in coming years. Besides, ASMI collaborates with numerous universities around the world to strengthen its ALD expertise which we regard as one of the driver driving up its R&D intensity. For the development of its tools and applications, ASMI also has R&D facilities in the Netherlands, the United States, Japan, and Korea. R&D cost will increase driven by Moore's Law and hence the dependence on better ALD and epitaxy technologies. For SG&A/Sales, we expect it can decrease gradually at the historical trend of 19A-21A in the forecasted period, going from 11.5% in 22E to 10.7% in 25E. Historically, the effective tax rate range from 14% to 17% from 19A-21A; we input a higher-end efficient tax rate of 23% given the potential increased tax obligation in ASMI's global expansions. With above assumptions of improved operating leverage but a surge in R&D in 22E, we expect the net margin to dip from 29% to 20% in 2022E but rise to 23% in 2025E.

**Exhibit 4: GM remains stable, NPM / EBIT difference enlarges due to increased tax obligation**



**Exhibit 5: ASMI R&D/Sales is expected to increase while SG&A/Sales decreases**



### Balance Sheet

#### Net Cash (Exhibit 6):

ASMI's 21A net cash position was around € 464 mn, while we model it to increase to € 4,255 mn in 26E due to decrease of dividend payout ratio and slight increase on R&D expense due to higher capitalization expenses and lower impairments, the improving operating cash flow, and the improving net income. The net cash per share of €9.79 in 21A increase to €84.58 in 26E was mainly due to its €100 million share buyback program in 2021 that reducing the outstanding share amount to 48.6mn.

#### ROE (Exhibit 7):

We expect the ROE to decrease from 21A 22.07% to 26E 19.9%, mainly driven by net margin deterioration from 29% to 27% in 26E, slightly dropping asset turnover ratio from 0.64x to 0.61x, and slightly decreased leverage of 1.82x to 1.19x. We regard this as unhealthy growth for ASMI considering deterioration in net margin and similar efficiency of asset turnover.

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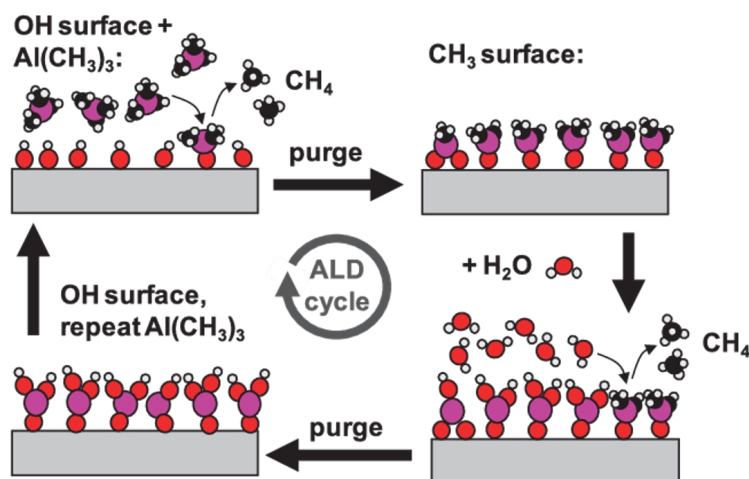
# Industry Introduction

### Atomic Layer Deposition (“ALD”) Industry

#### Industry Summary

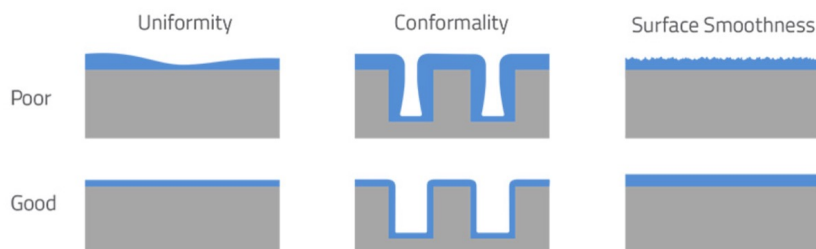
Atomic Layer Deposition (“ALD”) is a technique for depositing a thin film material from vapour phase. Compared with traditional chemical vapour deposition (CVD) processes, it provides increased control and accuracy by separating the reaction into half reactions, keeping the precursor materials separate. With a catalyst on the surface of wafer, the precursor materials react with the solid-state substrate to produce a deposit on it. Once all surface is covered, the reactions stops, and it might provide an active site for catalytic reaction with other precursors to be purged. The reaction is said to be self-limiting and repeated to achieve the required results.

Exhibit 14: ALD Production Process



Due to the characteristics of ALD, it allows for a better control of film thickness on an atomic scale, leading to a uniform film deposited. Also, it provides smooth surfaces with well controlled chemical composition, and layers that accurately conform to the topography of the surface.

Exhibit 15: CVD and ALD comparison



#### Future Prospect

Being an essential technology for wafer fabrication, ALD market is expected to keep enlarging under the recent growth of semiconductor industry. All favorable macroeconomic factors to semiconductor market are drivers for the ALD market: rising consumption of consumer electronics, increasing disposable income, rapidly growing population, rising urbanization and rising products by industry leaders, rising demand for integrated circuits (ICs) and raising technological advancement. Silicon dioxide is the isolating film layer between the gate electrode and the transistor channel in logic device. Yet, in recent decades, the semiconductor industry replaced silicon dioxide with materials with a high dielectric constant to continue transistor shrinks.

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# Industry Introduction

### Competition Landscape

Being the first few players focusing on the atomic layer deposition ("ALD") technology, ASM International has occupied most of the ALD market shares. Other major competitors are mainly Applied Materials Inc, Lam Research Corporation and Tokyo Electron Limited. Meanwhile, there are some minor players including SAMCO Inc and Veeco Instruments Inc.

We've listed out the major private peers which are more direct comparable:

#### Exhibit 21: Competitor Introduction

Company	Description
Applied Materials	Largest semiconductor equipment company globally with a wide range of product portfolio.
Lam Research	Products are mainly used in front-end wafer processing. Its ALD tools mainly focused on Memory space production for DRAM and VNAND.
Tokyo Electron	A Japanese electronics and semiconductor company that mainly produces IC and FPD production equipment.

#### Exhibit 22: Peer Comparisons

Company	Applied Materials	Lam Research	Tokyo Electron	ASM International
Listed Exchange	Nasdaq	Nasdaq	Tokyo Exchange	Euronext Amsterdam
Ticker	AMAT	LRCX	8035	ASM
Founding Year	1967	1980	1951	1968
ALD Market share	4%	14%	N/A	>50%
Product Range	Provides products for semiconductor systems and the display market. Meanwhile, it also provides services for clients with earlier generation equipment.	Focuses on the semiconductor market. It mainly provides products for Memory market occupying 60% of its total revenue, followed by products of Foundry (26%) and logic/integrated data (14%)	Covers the whole semiconductors manufacturing process, ranging from deposition, lithography, etching, cleaning, interconnect formation, testing and packing/inspection.	Mainly focus on Atomic Layer Deposition and Epitaxy technologies
<b>Valuation (€ m)</b>				
Enterprise Value	68,417	45,829	37,295	10,414
EV/EBITDA	8.45x	7.97x	8.56x	15.3x
P/E	20.3x	10.4x	13.2x	20.3x
<b>Financial Performances</b>				
R&D/Revenue	13%	10%	9%	13%
Debt/Equity	47.0x	83.2x	0.0x	1.05x

Applied Materials provide a highly diversified product portfolio. The customer's portfolio is also in high quality including Samsung Electronics Co., Ltd. Moreover, Given its long-term customers relationship with them, it is easier for Applied Materials to acquire lower-tier customers if they want to upgrade to ALD products. On the other hand, both ASMI and Lam research are aiming for Memory and logic/integrated device manufacturing. Yet, Lam Research offers a wider range of products to customers instead of only ALD and Epitaxy. Moreover, Lam research relies more heavily to the customer services revenue compared to ASMI which occupied more than half of its revenue.

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## Appendix

### ASMI 2021A-2026E Financial Summary

#### Income Statement (€ mn)

	2019A	2020A	2021A	2022E	2023E	2024E	2025E	2026E
<b>Revenue</b>	<b>1,284.0</b>	<b>1,328.0</b>	<b>1,730.0</b>	<b>2,147.8</b>	<b>2,594.7</b>	<b>3,101.5</b>	<b>4,045.9</b>	<b>4,698.7</b>
Cost of Good Sold	(645.5)	(704.4)	(901.9)	(1,112.9)	(1,318.5)	(1,545.1)	(1,975.1)	(2,246.8)
<b>Gross Profit</b>	<b>638.5</b>	<b>623.6</b>	<b>828.1</b>	<b>1,034.9</b>	<b>1,276.1</b>	<b>1,556.4</b>	<b>2,070.8</b>	<b>2,451.9</b>
SG&A	(148.9)	(157.4)	(189.6)	(233.7)	(282.9)	(326.9)	(418.8)	(477.9)
R&D	(110.8)	(139.0)	(147.1)	(189.2)	(233.1)	(262.6)	(340.2)	(388.7)
D&A	(78.3)	(89.0)	(95.6)	(38.7)	(44.4)	(51.4)	(59.1)	(68.1)
Other OPEX	-	-	-	-	-	-	-	-
<b>EBIT</b>	<b>378.7</b>	<b>327.1</b>	<b>491.5</b>	<b>612.0</b>	<b>760.1</b>	<b>966.9</b>	<b>1,311.8</b>	<b>1,585.2</b>
Non-Operating P&L	4.0	7.0	105.8	23.0	(4.6)	(50.8)	(74.0)	(41.7)
<b>Pre-tax Profit</b>	<b>382.7</b>	<b>334.1</b>	<b>597.3</b>	<b>635.0</b>	<b>755.5</b>	<b>916.1</b>	<b>1,237.8</b>	<b>1,543.5</b>
Tax Expense	(53.7)	(48.7)	(102.6)	(108.0)	(128.4)	(155.7)	(210.4)	(262.4)
Minority Interest	-	-	-	-	-	-	-	-
<b>Net Income, GAAP</b>	<b>329.0</b>	<b>285.4</b>	<b>494.7</b>	<b>527.1</b>	<b>627.0</b>	<b>760.4</b>	<b>1,027.3</b>	<b>1,281.1</b>
EBITDA	457.0	416.2	587.0	650.6	804.5	1018.3	1370.9	1653.3
<b>EPS (Basic, NT\$)</b>	<b>6.7</b>	<b>5.8</b>	<b>10.2</b>	<b>10.8</b>	<b>12.9</b>	<b>15.6</b>	<b>21.1</b>	<b>26.4</b>
<b>EPS (Diluted, NT\$)</b>	<b>6.6</b>	<b>5.8</b>	<b>10.1</b>	<b>10.8</b>	<b>12.8</b>	<b>15.5</b>	<b>21.0</b>	<b>26.2</b>
Wtdavg Shares out. (basic) (mn)	49.4	48.9	48.6	48.6	48.6	48.6	48.6	48.6
Wtdavg Shares out. (diluted) (mn)	50.0	49.4	48.9	48.9	48.9	48.9	48.9	48.9
DPS (Basic)	-	-	-	-	-	-	-	-

#### Growth & Margins (%)

Total revenue growth	-	3.4%	30.3%	24.2%	20.8%	19.5%	30.4%	16.1%
EBITDA growth	-	-8.9%	41.1%	10.8%	23.6%	26.6%	34.6%	20.6%
EPS growth	-	-12.3%	74.1%	6.6%	19.0%	21.3%	35.1%	24.7%
Gross margin	49.7%	47.0%	47.9%	48.2%	49.2%	50.2%	51.2%	52.2%
EBIT margin	29.5%	24.6%	28.4%	28.5%	29.3%	31.2%	32.4%	33.7%
Net margin	25.6%	21.5%	28.6%	24.5%	24.2%	24.5%	25.4%	27.3%

#### Balance Sheet (€ mn)

Cash & cash equivalents	497.9	435.2	491.5	1,007.6	1,518.8	2,178.6	3,096.2	4,255.1
Short-term investments	-	-	-	-	-	-	-	-
Accounts receivable	199.5	280.1	446.7	447.1	585.8	715.6	896.3	1,061.9
Notes receivable	-	-	-	-	-	-	-	-
Unbilled revenues	-	-	-	-	-	-	-	-
Inventories	173.2	162.9	211.8	272.5	312.5	369.1	474.5	536.3
Other current assets	73.5	72.9	51.0	65.8	63.2	60.0	63.0	62.1
<b>Total current assets</b>	<b>944.1</b>	<b>951.1</b>	<b>1,201.0</b>	<b>1,793.0</b>	<b>2,480.2</b>	<b>3,323.3</b>	<b>4,530.0</b>	<b>5,915.4</b>
Net PP&E	164.8	214.0	257.1	292.9	333.9	387.4	444.4	510.8
Other long-term assets	1,066.2	1,064.8	1,253.0	1,254.0	1,253.3	1,253.4	1,253.6	1,253.5
<b>Total assets</b>	<b>2,175.1</b>	<b>2,229.8</b>	<b>2,711.1</b>	<b>3,339.9</b>	<b>4,067.5</b>	<b>4,964.1</b>	<b>6,228.0</b>	<b>7,679.7</b>
Accounts payable	119.7	124.5	175.4	206.5	244.7	291.4	368.5	420.0
Other payables & accruals	110.7	65.7	114.3	145.2	154.0	192.7	244.9	273.8
Short-term debt	-	-	-	-	-	-	-	-
Deferred revenue	90.2	150.1	118.0	174.3	217.4	223.2	310.3	367.3
<b>Total current liabilities</b>	<b>320.6</b>	<b>340.3</b>	<b>407.7</b>	<b>526.1</b>	<b>616.2</b>	<b>707.2</b>	<b>923.8</b>	<b>1,061.1</b>
Long-term debt	15.8	13.0	15.9	34.5	55.9	82.1	111.1	144.7
<b>Total long-term liabilities</b>	<b>15.8</b>	<b>13.0</b>	<b>15.9</b>	<b>34.5</b>	<b>55.9</b>	<b>82.1</b>	<b>111.1</b>	<b>144.7</b>
Other liabilities	20.1	21.9	45.7	45.7	45.7	45.7	45.7	45.7
<b>Total liabilities</b>	<b>356.5</b>	<b>375.2</b>	<b>469.3</b>	<b>606.3</b>	<b>717.8</b>	<b>835.0</b>	<b>1,080.6</b>	<b>1,251.5</b>
Preferred shares	-	-	-	-	-	-	-	-
<b>Total common equity</b>	<b>1,818.7</b>	<b>1,854.7</b>	<b>2,241.8</b>	<b>2,733.6</b>	<b>3,349.7</b>	<b>4,129.1</b>	<b>5,147.4</b>	<b>6,428.2</b>
Minority interest	-	-	-	-	-	-	-	-
<b>Total liabilities &amp; equity</b>	<b>2,175.2</b>	<b>2,229.9</b>	<b>2,711.1</b>	<b>3,339.8</b>	<b>4,067.5</b>	<b>4,964.1</b>	<b>6,228.0</b>	<b>7,679.7</b>
BVPS (EUR)	36.8	37.9	46.1	56.2	68.9	85.0	105.9	132.3
Net Cash Per Share (EUR)	20.1	18.6	15.7	11.3	6.0	7.5	83.1	70.6



## ASM International | Europe

# Appendix

### ASMI 2021A-2026E Financial Summary

#### Cashflow Statement (€ mn)

	2019A	2020A	2021A	2022E	2023E	2024E	2025E	2026E
Net income	329.0	285.4	494.7	527.1	627.0	760.4	1,027.3	1,281.1
D&A add-back	78.3	89.0	95.6	38.7	44.4	51.4	59.1	68.1
Minority interest add-back	-	1.0	2.0	3.0	4.0	5.0	6.0	7.0
Net (inc)/dec working capital	(132.7)	(49.1)	(127.7)	50.1	(85.9)	(92.2)	(72.6)	(89.2)
<b>Cash flow from operations</b>	<b>291.6</b>	<b>330.0</b>	<b>486.5</b>	<b>614.8</b>	<b>586.1</b>	<b>719.4</b>	<b>1,013.7</b>	<b>1,260.1</b>
CAPEX	(48.7)	(95.4)	(72.2)	(74.5)	(85.4)	(104.8)	(116.1)	(134.6)
Acq of Intangible Asset	(30.5)	(21.2)	(48.4)	-	-	-	-	-
Chg. in ST Investment	-	-	-	-	-	-	-	-
<b>Cash flow from investing</b>	<b>(79.2)</b>	<b>(116.6)</b>	<b>(120.6)</b>	<b>(74.5)</b>	<b>(85.4)</b>	<b>(104.8)</b>	<b>(116.1)</b>	<b>(134.6)</b>
Dividend paid	2.1	(0.1)	-	-	-	-	-	-
Net cash from debt	22.8	(3.6)	4.3	11.0	21.4	26.2	29.0	33.6
Share issuance/(repurchase)	45.8	(9.3)	(9.2)	-	-	-	-	-
<b>Cash flow from financing</b>	<b>195.5</b>	<b>(113.6)</b>	<b>98.4</b>	<b>(24.3)</b>	<b>10.5</b>	<b>45.2</b>	<b>20.0</b>	<b>33.3</b>
Effect of foreign exchange rates	-	1.0	2.0	3.0	4.0	5.0	6.0	7.0
<b>Total cash flow</b>	<b>407.9</b>	<b>100.8</b>	<b>466.3</b>	<b>519.1</b>	<b>515.2</b>	<b>664.8</b>	<b>923.6</b>	<b>1,165.9</b>
Free cash flow	242.9	234.6	414.3	540.4	500.7	614.6	897.6	1,125.6
Free cash flow per share	4.9	4.8	8.5	11.1	10.3	12.6	18.5	23.2

#### Ratios

	2019A	2020A	2021A	2022E	2023E	2024E	2025E	2026E
<b>ROE (%)</b>	<b>18.1%</b>	<b>15.4%</b>	<b>22.1%</b>	<b>19.3%</b>	<b>18.7%</b>	<b>18.4%</b>	<b>20.0%</b>	<b>19.9%</b>
Asset/Equity Ratio (x)	1.20x	1.20x	1.21x	1.22x	1.21x	1.20x	1.21x	1.19x
Asset Turnover (x)	0.59x	0.60x	0.64x	0.64x	0.64x	0.62x	0.65x	0.61x
Net debt/EBITDA (x)	-1.1x	-1.0x	-0.8x	-1.5x	-1.8x	-2.1x	-2.2x	-2.5x
Net debt/equity (%)	-27%	-23%	-21%	-36%	-44%	-51%	-58%	-64%
Inventory days	97.9	84.4	85.7	89.4	86.5	87.2	87.7	87.1
Receivable days	56.7	77.0	94.2	76.0	82.4	84.2	80.9	82.5
Payable Days	1.6	16.2	15.5	972.2	12.9	79.0	713.0	534.4
Cash Conversion Cycle	153.0	145.2	164.4	-806.8	156.0	92.4	-544.4	-364.7
Unbilled Revenue/Sales (%)	3%	4%	4%	3%	4%	4%	4%	4%

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